RSVP: Pure Science Benefits the National Interest

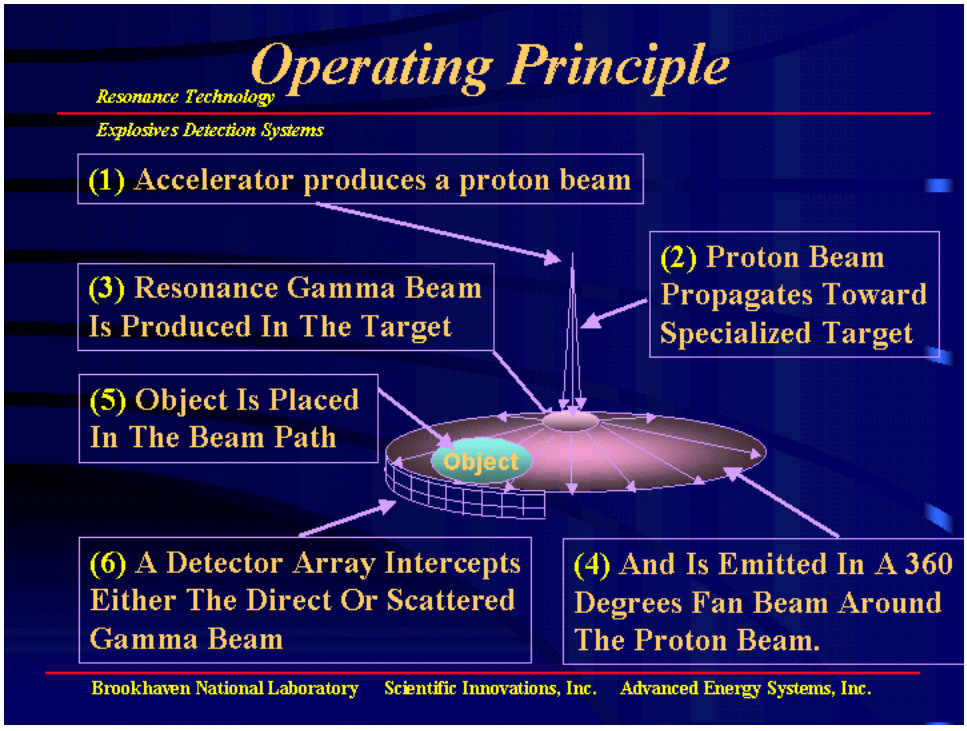
The primary goal of the RSVP experiments MECO and KOPIO is to advance the frontiers of our knowledge at the cutting edge of pure science. However, the innovative tools developed specially to carry out such sensitive experiments have often produced practical applications with dramatic impact on society - the World Wide Web is one spectacular example.

Thus, it is thrilling to consider that an important application might develop out of RSVP. One of the critical features required for the success of KOPIO, is highly efficient imaging of gamma rays. The centerpiece of the experiment is a huge device called a "Pre-Radiator" which converts gamma rays to detectable charged particles and provides an accurate measure of their direction, position, and energy.

Douglas Bryman, co-scientific spokesman for KOPIO and developer of the Pre-Radiator concept, recognized that this technique might have broader applicability than an esoteric particle physics experiment. He applied for and received a patent (US Patent #6,100,532 August 1998) for a "Detector of Gamma Rays", which outlines an implementation of such a device for smaller, practical applications such as the detection of contraband explosives.

Bryman, Professor of Physics at the University of British Columbia works at the TRIUMF laboratory in Vancouver (Canada). In the mid 1990s, three of Bryman's TRIUMF colleagues invented and patented a scheme for the detection of contraband plastic explosives. This scheme has been developed by Advanced Energy Systems of Long Island (formerly a division of Northrop-Grumman and now also an industrial partner of RSVP), funded in part by the FAA and DARPA.

The system is based on resonant excitation of the nitrogen in plastic explosives using gamma rays produced by a proton beam striking a nitrogen target. The gamma ray imaging detector patented by Bryman could dramatically reduce the cost while improving



the performance of the overall explosive detector. If these developments are brought to fruition, the work of KOPIO and AES could lead to a much safer travel environment. The techniques and theoretical concepts that are being employed, from production of the protons to the detection of the gamma rays, all trace their origins to forefront nuclear and particle physics research projects like KOPIO and MECO.